

LISTING OF CLAIMS

This listing of claims replaces all prior versions and listings of claims in the patent application.

Claims 1-15 (cancelled)

Claim 16 (previously presented): A method of forming flexible plastic containers and filling with infusion-type solutions, the method comprising the steps of:

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printing of a film wound off a supplying reel;

dry cleaning the printed film by directing a gas from a gas applicator toward and across surfaces of the film and flowing particles removed from the surfaces and the gas out through a nozzle such that the film is not touched during dry cleaning;

aligning the film for folding thereof;

hot-bar longitudinal welding of the folded film to create a bag;

sterilizing a cavity of a valve by humidifying the cavity without exposing the cavity to ultraviolet radiation;

welding the valve to the film using a control algorithm to control the speed and position of a welding head during the welding head's approach to an anvil;

shaping the bag using hot tools controlled by an algorithm; and

supplying a high precision dosage of a filling liquid into the bag.

Claim 17 (previously presented): The method of claim 16, wherein the hot-bar longitudinal welding of the film creates a vertical seal.

Claim 18 (previously presented): The method of claim 16, wherein the cavities of the valve are subjected to humidification outside the bag and without contact with the filling solution by a means to dose the liquid as a function of a volume of the cavity.

Claim 19 (previously presented): The method of claim 18, wherein the humidification step is effected by a humidification apparatus located downstream from a vibrator associated with the step of feeding the valves for welding onto the bag, and wherein a humidification

control that controls the humidification of the cavities of the valves is located downstream from the humidification apparatus.

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Claim 20 (previously presented): The method of claim 18, wherein a liquid used for humidification is selected from the group consisting of distilled water, physiological solutions and hydrogen peroxide.

Claim 21 (previously presented): The method of claim 19, wherein the humidification apparatus includes a source of sterile liquid, a dosing valve, a fluxstate, and a nozzle that is moved by a piston controlled by a sensor, the nozzle including a lance for penetration into the valve cavities, the discharged sterile liquid being detected by a circuit with electric bridging.

Claim 22 (previously presented): The method of claim 20, wherein hydrogen peroxide is used to sanitize and detect electric conductability in the cavities.

Claim 23 (previously presented): The method of claim 16, wherein the printing of the film wound off the supply reel is facilitated by a hot printer having a hot press, a pigmented film, and a film impression member that impresses the film wound off the supply reel.

Claim 24 (previously presented): The method of claim 16, wherein the film is dry cleaned with purified air.

Claim 25 (previously presented): The method of claim 16, further including the step of welding a suspension ring to the bag.

Claim 26 (previously presented): The method of claim 16, further including the step of forming a suspension hole in the bag.

Claim 27 (previously presented): The method claim 16, further including the step of accumulating the film prior to aligning the film.

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Claim 28 (previously presented): The method of claim 16, wherein the filling liquid is precisely dosed in a station that includes an inlet portion having a contribution regulation valve, a constant pressured valve, and a lobed flowmeter having a Hall effect that controls the dosing of the filling liquid.

Claim 29 (previously presented): The method of claim 16, further including the step of washing a portion of the film with the filling liquid prior to the bag being welded longitudinally.

Claim 30 (previously presented): The method of claim 16, further including the step of transverse welding the film to form the bag.

Claim 31 (previously presented): The method of claim 30, wherein the transverse welding is carried out with mobile bars heated by electric resistances of high output having a plurality of temperature control points and cooling effected by mobile cold bars that cool the welding.

Claim 32 (previously presented): The method of claim 31, wherein the cold bars contain means for cutting and separating the bags.

Claim 33 (previously presented): The system of claim 16, wherein the valve welding is accomplished with a position transducer, a cylinder, a slide, a sonotrode and a piezoelectric transducer.

Claim 34 (previously presented): A method of forming flexible plastic containers and filling with infusion-type solutions, the method comprising the steps of:

printing of a film wound off a supplying reel;

dry cleaning the printed film by directing a gas from a gas applicator toward and across surfaces of the film and flowing particles removed from the surfaces and the gas out through a nozzle such that the film is not touched during dry cleaning;

accumulating the film;

aligning the film for folding thereof;

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- washing the film with the filling liquid;
- hot-bar longitudinal welding and transverse welding of the folded film to create a bag;
- sterilizing a cavity of a valve by humidifying the cavity without exposing the cavity to ultraviolet radiation;
- welding the valve to the film using a control algorithm to control the speed and position of a welding head during the welding head's approach to an anvil;
- shaping the bag using hot tools controlled by an algorithm;
- forming a suspension hole in the bag; and
- supplying a high precision dosage of a filling liquid into the bag.

Claim 35 (previously presented): The method of claim 28, wherein the dry cleaning step occurs prior to sterilization.

Claim 36 (previously presented): The method of claim 16, wherein the dry cleaning step further comprises suspending the printed film between gas application chambers.

Claim 37 (previously presented): The method of claim 16, wherein the dry cleaning step further comprises applying the gas to the printed film through a first nozzle and removing the gas from the printed film through nozzles prior to and after the first nozzle in a film travel direction.

Claim 38 (previously presented): The method of claim 16, wherein the step of sterilizing a cavity of a valve by humidifying the cavity further comprises controlling humidification in the valve cavity by measuring electrical conductivity in the valve cavity.

Claim 39 (withdrawn): A method of making a form, fill and seal container, comprising the steps of:

- feeding a flexible film;
- suspending the flexible film in a cleaning station;
- dry cleaning a surface of the suspended flexible film by blowing a gas toward the surface of the suspended flexible film, removing particles from the surface, and flowing the air and particles away from the flexible film through a nozzle;

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forming the container from the flexible film;
filling the container with a substance; and
sealing the container closed.

Claim 40 (withdrawn): The method of making a form, fill, and seal container of claim 39, wherein the dry cleaning step further comprises passing the suspended film between at least two air nozzles.

Claim 41 (withdrawn): The method of making a form, fill, and seal container of claim 39, wherein the dry cleaning step further comprises applying the gas to the surface of the film through a first nozzle and removing the gas from the surface of the film through nozzles prior to and after the first nozzle in a film travel direction.

Claim 42 (withdrawn): The method of claim 39, wherein the dry cleaning step occurs prior to sterilization.

Claim 43 (withdrawn): A method of making a form, fill, and seal container, comprising the steps of:

feeding a flexible film;
forming the container with the flexible film;
sterilizing at least a portion of the container with humidity;
controlling the humidity by measuring electrical conductivity in the portion of the container being sterilized;
filling the container with a substance; and
sealing the container closed.

Claim 44 (withdrawn): The method of making a form, fill, and seal container of claim 43, wherein the sterilizing step further comprises the step of sterilizing a cavity of a valve by humidifying the cavity without exposing the cavity to ultraviolet radiation.

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Claim 45 (withdrawn): The method of making a form, fill, and seal container of claim 43, wherein the sterilizing step further comprises humidification of a liquid selected from the group consisting of distilled water, physiological solutions, and hydrogen peroxide.

Claim 46 (withdrawn): The method of making a form, fill, and seal container of claim 43, wherein the sterilizing step further comprises the step of sterilizing a valve cavity by inserting a nozzle into the valve cavity and discharging a sterile humidified liquid through the nozzle into the valve cavity.

Claim 47 (withdrawn): A system for making form, fill, and seal containers using a flexible film, comprising:

- a film supply station;
- a film dry cleaning station downstream of the film supplying station and having an air applicator and an air remover;
- a film container formation station downstream of the film dry cleaning station;
- a container filling station downstream of the film container formation; and
- a container sealing station downstream of the container filling station.

Claim 48 (withdrawn): The system of claim 47, wherein the air applicator comprises air applicator nozzles positioned to apply cleaning air to opposite sides of the flexible film.

Claim 49 (withdrawn): The system of claim 48, wherein the air remover comprises air removal nozzles positioned to remove the cleaning air from the opposite sides of the flexible film.

Claim 50 (withdrawn): The system of claim 49, wherein the air remover further comprises air removal nozzles upstream and downstream of the air applicator nozzle on each side of the flexible film.